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REPORT ON A COLLECTION OF AMPHIBIANS AND
REPTILES FROM SONORA, MEXICO, WITH THE
DESCRIPTION OF A NEW LIZARD

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DURING the latter part of June and the early part of July, 1932, Jean Piatt, John Scofield, and the writer made an expedition into Sonora for the purpose of collecting herpetological specimens for the Museum of Zoology, University of Michigan. Unfortunately the time spent in the field was limited, but the collection, while not large, is of interest in that it extends the ranges of several forms and contains the type of an apparently new subspecies of lizard. Twenty-four species, represented by 326 specimens (59 amphibians and 267 reptiles) were secured.

The party crossed the border at Nogales, Arizona, and followed the route to Hermosillo and Guaymas; the collecting was done near Puerto, where the country assumes the desert character, and near Noria, Hermosillo, and Guaymas. The majority of the reptiles were obtained about five miles south-east of Hermosillo in the true desert country. At Guaymas the mountains come down to the sea and the plains are replaced by narrow valleys.

During the greater part of the time spent in the region it was very dry and no amphibians were seen. In July, how-

ever, they made their appearance as it rained practically every night. All the snakes, except one, were also taken during this period.

The rattlesnakes have been identified and reported on in this paper by Mr. Howard K. Gloyd. The author wishes to express his thanks to Mrs. Helen T. Gaige for the identification of many of the species and assistance in other ways. Dr. Remington Kellogg kindly examined the specimens of *Gastrophryne* and the U. S. National Museum loaned specimens of *Dipsosaurus* for comparison.

Scaphiopus couchii Baird

Noria, 3; Hermosillo, 5.

The body lengths of the specimens from Noria are respectively 36, 40, 34 mm., of the ones from Hermosillo, 66, 35, 42, 63, 58 mm. Parotoid glands absent. Skin warty but not conspicuously so. The light, supra-anal spots apparent in *S. hammondi multiplicatus* are absent in the 3 largest specimens but present to a greater or less extent in the smaller ones. Head flat between the eyes. Fingers in order of decreasing length 3, 1, 2, 4. Tympanum visible but small; less distinct in the smaller specimens. The color pattern is that of *S. couchii*.

Notwithstanding the fact that Kellogg (1932: 21) lists this species only from northeastern Mexico, it occurs in Arizona; the absence of any records from Sonora is no doubt due only to the lack of collecting.

The Hermosillo specimens were taken on the desert at night during rain and the ones from Noria about pools of water in company with *Pternohyla fodiens*.

Bufo alvarius Girard

Santa Anna, 1; Puerto, 3; Hermosillo, 2.

This toad was not observed until the night of the first rain when one large specimen was collected. The others were taken on nights when no rain occurred.

Pternohyla fodiens Boulenger

Noria, 41.

The specimens agree with the original description (1882: 326) and that given by Kellogg (1932: 135) in all respects except in having a distinct tarsal fold, and a shorter hind leg. In this series the tibio-tarsal articulation reaches only to the axilla, whereas it is described as touching the anterior margin of the tympanum. The males have a head and body length of 51 to 61 mm., the females of 39 to 64 mm.

The occurrence of this frog in northern Sonora forms a considerable extension of its range, which Kellogg has defined as from southern Sinaloa south.

This series, consisting of 35 males and 6 females, was taken at night around pools of water in the bed of an arroyo about 3 miles north of Noria. The vegetation in the immediate vicinity of the water was rather dense. The specimens were not timid and were easily collected with a light as they sat on the muddy banks of the pools, calling in loud and somewhat harsh voices. The preponderance of males, and the fact that the larger females contained eggs, would seem to indicate the beginning of the breeding season.

Gastrophryne texensis (Girard)

Noria, 4.

The specimens are all males, with a head and body length of 25 to 30 mm.

Further collecting in northern Mexico will be necessary before the status of this *Gastrophryne* is clearly understood. It differs distinctly from *G. usta* in coloration, and in having only one metatarsal tubercle, and from *elegans* in coloration and proportions. The coloration is that of *texensis*, and the proportions are about the same, though slight differences not evident in proportional measurements seem apparent to the eye. The Sonoran specimens will have to stand as *texensis* for the present, in spite of the wide gap in the known range.

Found about the same pools as *Pternohyla fodiens*.

Phyllodactylus tuberculosus Wiegmann

Hermosillo, 9.

Found at night, and only among the rocks of the hillside. Specimens are probably more numerous than the numbers taken indicate, for as the light approached they disappeared into the crevices while the collector was still some distance away.

Coleonyx variegatus (Baird)

Hermosillo, 17.

Taken only at night on the open desert with the exception of two or three specimens found under stones on a hillside.

Six specimens have a median dorsal light stripe separating the transverse bands into blotches.

***Dipso-saurus dorsalis sonoriensis*, subsp. nov.**

Type locality.—Hermosillo, Sonora, Mexico.

Type specimen.—Adult male, No. 72121 in the collections of the Museum of Zoology, University of Michigan. Collected July 1, 1932.

Paratypes.—Twenty-five specimens collected at Puerto and Hermosillo, Sonora, Mexico, with the type.

Diagnosis.—A *Dipso-saurus* having one row of small scales separating the nasal and rostral plates and a color pattern consisting of large, white or grayish spots on the dorsal and dorso-lateral surfaces. Those of the upper sides have a darker outline.

Description of type specimen.—Body robust. Head short, rounded. Nostril opening in a single rounded plate separated from the rostral by one row of small scales. Two scale rows between the supraocular regions. A large subocular with two smaller ones anteriorly and three posteriorly. Ten scales in both supra- and infralabial series. Ear opening large, nearly vertical; anterior margin slightly denticulated. Symphyseal plate nearly triangular and touching the two terminal scales of a slightly enlarged V-shaped series. Scales of gular fold small. Dorsal scales small, keeled; ventrals

larger, smooth. A series of scales, somewhat enlarged and strongly keeled, form a dorsal crest that extends upon the tail. Latter long, tapering, and with obliquely keeled scales disposed in rings. Femoral pores 21. Length of head and body 101 mm.

The ground color is light or grayish brown on the dorsal surface and becomes gradually lighter on the sides until it grades into the white of the belly. Along the dorsal crest occurs a series of grayish spots 2 to 2.5 mm. in width and 4 mm. in length. These do not encroach upon the neck. The circular areas of the back and upper sides are lighter, more distinct, about 2 mm. in diameter, and outlined with dark brown. This margining of the spots becomes progressively more distinct from the dorsal crest. The light areas also exhibit a strong tendency to arrangement in transverse series. The lateral surfaces below the spots are marked with brown, longitudinal, broken lines. On the upper side of the femur occurs a number of slightly smaller, closely placed light spots that become fainter on the tibia and tarsus. The tail is a light brown very faintly barred with darker. The head is essentially the color of the body but somewhat lighter. The throat and gular regions are white, marked with longitudinal and oblique, brownish lines.

The 25 paratypes show little variation from the foregoing description. All have the one scale row separating the nasal and rostral plates. The femoral pores average 19.3, extremes 17-22. The distinct pattern of spots is constant throughout. The markings of the throat and gular regions vary somewhat, in some specimens they are very indistinct, and in others there is a tendency to form a network of lines. The tail is less distinctly barred or banded than in the other forms of *Dipsosaurus*, but the significance of this tendency is doubtful.

From *D. d. dorsalis* the subspecies here described may be easily distinguished by the fact that it has only one row of scales between the nasal and rostral plates and has a markedly different color pattern. In 9 specimens of *d. dorsalis* from California and 46 from southwestern Arizona, 62% have two

scale rows separating the nasal from the rostral plate, 31% have one row, and 6% have one on one side and two on the other. All specimens are typical of *d. dorsalis* in color pattern. The spots of *d. dorsalis* are fainter, smaller, and lack the dark borders. *D. d. sonoriensis* entirely lacks the broken longitudinal lines seen on the back of *d. dorsalis*. In old specimens the pattern remains the same but is somewhat obscured, especially along the dorsal crest.

On comparing the young of *d. dorsalis* and *d. sonoriensis*, the difference in color pattern is marked. Immature specimens of *d. sonoriensis* are much the same as the adult, the pattern being identical and scarcely more intense. The young of *d. dorsalis* frequently lack the longitudinal markings of the adult, but the spots are more numerous and distinct. They are smaller than in *d. sonoriensis*, greater in number, lack the dark borders, occur on the neck, and are arranged in definite transverse series.

Somewhere in the desert of northwestern Sonora this form must intergrade with *d. dorsalis*. As individuals from southwestern Arizona tend to intergrade in respect to the number of scales separating the nasal and rostral plates, and none of the Hermosillo or Puerto specimens do so, the overlapping of their ranges probably occurs not a great distance below the Arizona line. This is borne out by a National Museum specimen with a locality label of "northwestern Sonora," which has on one side one row of scutes between the nasal and the rostral, and on the other side two rows, and which has a color pattern much nearer that of *d. sonoriensis*.

From *D. d. lucasensis* Van Denburgh, of the cape region of Lower California, *d. sonoriensis* may be distinguished only by the color pattern. As *d. lucasensis* resembles *d. dorsalis* in this respect it may be recognized at a glance.

Crotaphytus wislizenii Baird and Girard

Puerto, 1.

The greatest width of the head is equal to the distance from ear opening to nostril, but the latter is much closer to the end

of snout than to the inner orbital angle. There is no indication of transverse lines except on the tail. The back and upper surfaces of the legs are marked with rather large, brown spots, and over the intervening ground color of lighter brown are sprinkled numerous white specks.

Crotaphytus collaris dickersonae (Schmidt)

Hermosillo, 1; 40 miles north of Guaymas, 1.

In describing *Crotaphytus dickersonae*, Schmidt (1922: 638) distinguishes it from *c. baileyi* by the length of the hind leg and tail. For *c. baileyi* he gives the average proportion of the hind leg to body length as .87, and for the one specimen he had of *dickersonae*, 1.04. Of the total length the tail of *c. baileyi* averages .66, while that of his specimen of *dickersonae* is .70.

The average for the Sonoran specimens is leg .98, tail .69 for one, and leg .96, tail .64 for the other. The length of the hind leg is obviously much nearer *dickersonae*, and it is to be expected that additional specimens will show some variation from the type. The tail ratio of one is very close to that given for *dickersonae*, while the other is even less than that of *c. baileyi*. If the range of variation in *dickersonae* is not so great as to preclude its recognition as a valid subspecies, it appears that the present specimens may be referred to it.

Schmidt (1922: 639) writes that "it is possible that this species will be found to extend on the Mexican mainland and that it will ultimately be referred to a subspecific rank under *c. collaris*, occupying the southern portion of the range of the species on the western coast of Mexico."

Callisaurus inusitatus Dickerson

Hermosillo, 26; Guaymas, 16; Puerto, 1.

In all specimens the lateral blotches of the males are indistinct and in the majority joined together below, agreeing in this character with *inusitatus*. The number of femoral pores is extremely variable and probably has little significance. Extremes 8-19, average 14.6. Van Denburgh (1922: 151)

gives the extremes of *inusitatus* as 16–22, average 18.4, and the extremes of *v. ventralis* as 11–24.

At Puerto this conspicuous lizard was not as abundant as at Hermosillo and Guaymas. In the vicinity of the latter town the large males were collected frequently while at Hermosillo only one large specimen was secured.

At Guaymas specimens were taken close to the coast, frequently on the white sands of the beach. Inland they were confined to the desert and proved difficult to collect, even with the aid of a gun.

Holbrookia elegans Bocourt

Hermosillo, 57; Guaymas, 3; Puerto, 2; Llano, 1.

All specimens appear to be referable to *elegans*. There are no granular scales between the enlarged supraoculars and frontals. Comparison of the tabulations of these specimens with those given by Schmidt (1922) show that the head and body average smaller and that the tail and hind leg are longer and agree with *propinqua* instead of *elegans* in this respect. The dorsal spots are distinct in all specimens.

In the region about Hermosillo this species was abundant, it was much less so at Guaymas. It was one of the few lizards to remain active during the afternoon. At this time it was to be found about the bases of mesquite bushes instead of on the open desert, its usual morning haunt.

The Guaymas specimens were taken not more than 50 yards from the Gulf.

Uta ornata lateralis (Boulenger)

Puerto, 1; Hermosillo, 3; Guaymas, 2.

The Puerto specimen, one from Hermosillo, and one from Guaymas show a tendency to have two rows of enlarged dorsal scales anteriorly.

Two individuals taken from mesquite bushes, the others were on the ground.

Sceloporus clarkii Baird and Girard

Hermosillo, 2.

Taken from the rocks on a hillside.

Holbrookia elegans Bocourt

No. Spec.	Sex	Locality	Femoral Pores		Head & Body Length		Tail		Tail Ratio		Leg Ratio		
			Ex.	Av.	Ex.	Av.	Ex.	Av.	Ex.	Av.	Ex.	Av.	
3	♀	Guaymas	13-13	13.8	mm. 53-63	57.0	69.0	0.55	0.74-0.89	0.77
1	♂	"	15.0	63.0	0.84
34	♀	Hermosillo	11-15	13.0	43-56	48.2	55-71	61.7	0.52-0.66	0.58	0.74-1.0	0.82	
23	♂	"	11-16	12.7	45-61	53.3	72-83	75.6	0.55-0.60	0.57	0.75-0.93	0.88	
1	♂	Puerto	.....	10.5	.....	58.0	.....	73.0	.....	0.55	.....	0.77
1	♀	"	12.5	43.0	0.93
1	♂	Llano	11.5	58.0	73.0	0.55	0.79

Phrynosoma solare Gray

Hermosillo, 1; 15 to 20 miles south of Hermosillo, 3.

Horned toads appeared to be scarce. In addition to the ones taken another was captured near Llano but subsequently escaped. The Hermosillo specimen was found at night on a hillside and the others in the morning, within 50 feet of each other. The vegetation at the place of these captures was somewhat denser than in adjacent areas.

Heloderma suspectum Cope

Ten miles south of Noria, 1.

Found in the open at night.

Cnemidophorus sexlineatus perplexus Baird and Girard

Puerto, 6; Hermosillo, 42; Guaymas, 5.

The majority of these specimens are young and of the seven lined phase; a few of the eight lined occur. The larger individuals have six lines. One adult from Guaymas differs from the rest in that the ground color is brown, the two central stripes faint, and the lateral ones sharply in contrast. There are no spots between the lines.

At Hermosillo the young were much more abundant than the adult, while none were seen at Guaymas. Their habits appeared to be much the same as those of *C. t. tessellatus*.

Cnemidophorus tessellatus tessellatus (Say)

Puerto, 10; Hermosillo, 18; Guaymas, 1.

All specimens are black below, lighter posteriorly, and brown above. This coloration is typical of *melanostethus*, synonymized by Burt (1931: 148). Cope (1898: 582) probably had this animal before him when describing *aethiops* from Hermosillo, which differs only in the dorsal coloration. Cope described *aethiops* as black above and below.

During the earlier morning hours, when these lizards came out of their holes to feed, they were to be seen scratching around piles of manure and pushing over dung in search of

beetles. In the afternoon they remained in the shelter of mesquite and creosote bushes.

At Hermosillo they were the predominant *Cnemidophorus*, but no young were taken. At Guaymas this species appeared to be replaced to a great extent by *C. s. perplexus*.

Constrictor constrictor imperator (Daudin)

Hermosillo, 2.

Mus. Zool. No.	Scale Rows	Dorsal Blotches	Infra-labials	Supra-labials	Vent.	Caud.	Length mm.	Sex
72101	76	28	24	22	247	48	1175	♀
72102	73	29	25	21	239	57	1065	♂

Both specimens have the longitudinal dark line on the head and on the transverse line between the orbital regions.

Taken at night within 15 feet of each other on a hillside. They were very gentle in disposition.

Masticophis semilineatus (Cope)

Hermosillo, 1.

Mus. Zool. No.	Scale Rows	Infra-labials	Supra-labials	Vent.	Caud.	Length mm.	Sex
72103	17-15-13-12	10	8	210	127	1222	♂

Taken at night from a bush on a hillside. Another one was seen in a similar situation but it escaped.

Masticophis piceus (Cope)

Fifteen miles south of Hermosillo, 1.

Mus. Zool. No.	Scale Rows	Infra-labials	Supra-labials	Vent.	Caud.	Length mm.	Sex
72104	17-15-13-13	10	8	195	119	1250	♂

The anterior third of the body is uniformly black. The following third has at wide intervals 3 irregular, transverse,

brown markings that appear to be the blending of the light brown color of the posterior third of the body into the black. The 6 median dorsal scale rows of this lighter area have each scale tipped with black. The upper preocular on the left side is marked by a vertical line of white; on the right one the white line is reduced to a small spot. Five yellowish spots on the throat. In spirits the belly is very dark anteriorly, becomes lighter in the middle of the body, and is of a subdued rose color posteriorly.

This was the only species of snake observed during the daytime. The specimen captured raced over the ground and into a large bush from which it refused to descend despite the objects hurled at it. It did not remain in one place but moved nervously from branch to branch and was finally knocked out of the bush with a stick.

About 10 miles north of Magdalena a snake that I am sure was of this species crossed the road but disappeared and could not be found.

Hypsiglena ochrorhyncha (Cope)

Hermosillo, 1.

This specimen has the typical *ochrorhyncha* markings, a median dorsal, longitudinal, brown spot on the neck extending forward to the posterior tips of the parietals and a similar area on either side of the neck from which a narrow band runs forward to the eye. Ventrals 185; caudals 50; scale rows 21; supralabials 8; infralabials 10; subocular present.

Found at night about 2 feet above ground in a mesquite bush near a large mass of rocks. It was not disturbed by the light but when touched fell to the ground and disappeared beneath the loose stones.

Crotalus tigris (Kennicott)

Hermosillo, 1.

This is the second specimen known from Sonora: the first, reported by Klauber (1931: 359), came from Caballo, near Guaymas. It is a strikingly marked individual with very distinct crossbands making a pattern of unusual contrast. A

character which appears not to have been mentioned by previous authors is a pinkish mid-dorsal stripe, 2 to 4 scales wide, which in the fresh specimen was conspicuous between the crossbands of the middle of the body, but which faded within a few weeks after preservation.

In scutellation there is no marked departure from the variations listed by Klauber in his recent review of this species (*l. c.*: 356-357) except that both lower preoculars are vertically divided. It has a complete set of 7 rattles, the proximal 2 of which are equal in size and the remaining 5 gradually tapering.

Mus. Zool. No.	Scale Rows	Infra-labials	Supra-labials	Vent.	Caud.	Length mm.	Sex
72096	26-25-20	15-14	15-14	169	25	785	♂

Crawling on the desert at night near the base of a hill.

Crotalus molossus Baird and Girard

Hermosillo, 3.

These three specimens fill a gap in the known range of the species and, with the exception of one from San Esteban Island, Gulf of California, reported by Schmidt (1922: 697), constitute the southernmost record for the species in western Mexico. The generally dull coloration of these specimens resembles that of *molossus* from New Mexico and Texas rather than that of the brilliant yellow and black examples from the mountains of southern Arizona. Ground color (soon after preservation) pale greenish gray or light olivaceous brown; dorsal rhombs uniform brownish gray or dark grayish brown, the anterior ones bordered with a row of cream colored or grayish white scales; the light patches in centers of dorsal blotches much reduced, and in No. 72097 lacking altogether; lateral points of each "diamond" extended ventrally as narrow transverse bands which become relatively wider toward the tail as the blotches shorten and widen toward the posterior

end of the body. Ventral surface cream color, immaculate except for faint gray blotches on the ends of the posterior ventrals. Head light grayish brown above with only a faint dark pattern; an indistinct pale brown stripe on side from eye to just above angle of mouth; labials, chin shields, and throat white. Tail generally black above and below, but from 5 to 7 bands of deeper black can be distinguished.

In scutellation No. 72097 exhibits no variations of special importance. Nos. 72098 and 72099, however, have certain peculiarities which are remarkable even for this variable species. In No. 72098 the nasals are separated from the supralabials by two rows of small scales; No. 72099 is similar except that the double row of scales ends anteriorly in a single larger scale against the rostral. In both these specimens a row of small scales separates the canthals and supraoculars from the upper preoculars and loreals. The lower preoculars of No. 72098 are divided vertically into two almost equal parts.

The 8 or 9 rattles of Nos. 72098 and 72099 are approximately equal in size, an indication of retarded growth, although both are relatively small snakes, much under maximum size. That sexual maturity had been reached is shown by the fact that both contained foetal young almost ready for birth. No. 72098 contained 5, a small amount of unabsorbed yolk with each. The hemipenes of the baby males were not yet retracted, and the egg teeth were discernible. The 3 young of No. 72099 were much larger than those of the other brood, measuring 278, 280, 297 mm. in total length, all the yolk had been absorbed, and the egg teeth were relatively much reduced. In coloration and pattern they resemble the adults except in the relatively more conspicuous tail bands.

Mus. Zool. No.	Scale Rows	Infra-labials	Supra-labials	Vent.	Caud.	Length mm.	Sex
72097	25-23-19	18	16	184	28	930	♂
72098	29-25-21	17-18	17	191	21	770	♀
72099	27-25-20	17-18	17-16	189	21	710	♀

Two specimens taken at night from mesquite bushes on a hillside near large masses of rocks. Both were about 6 feet above the ground. The third specimen was found at night also, as it was crawling from a crevice in a rock.

Kinosternon flavescens (Agassiz)

Llano, 2.

Found at night in a shallow, muddy pool.

REFERENCES CITED

- BOULENGER, G. A.
1882. Description of a new Genus and Species of Frogs of the Family Hylidae. *Ann. and Mag. Nat. Hist.*, 10 (5), No. 58: 326, 327.
- BURT, C. E.
1931. A study of the Teiid Lizards of the Genus *Cnemidophorus* with Special Reference to their Phylogenetic Relationships. *Bull. U. S. Nat. Mus.*, No. 54: 1-286.
- COPE, E. D.
1898. Crocodilians, Lizards and Snakes of North America. *Ann. Rept. U. S. Nat. Mus.*: 151-1294.
- KELLOGG, R.
1932. Mexican Tailless Amphibians in the United States National Museum. *Bull. U. S. Nat. Mus.*, No. 160: 1-224.
- KLAUBER, L. M.
1931. *Crotalus tigris* and *Crotalus enyo*, two little known Rattlesnakes of the Southwest. *Trans. San Diego Soc. Nat. Hist.*, 6, No. 24: 353-370.
- SCHMIDT, K. P.
1922. The Amphibians and Reptiles of Lower California and the Neighboring Islands. *Bull. Amer. Mus. Nat. Hist.*, 46, Art. 11: 607-707.
1922. A Review of the North American Genus of Lizards *Holbrookia*. *Tom. cit.*, Art. 12: 709-725.
- VAN DENBURGH, J. V.
1922. The Reptiles of Western North America. *Occ. Pap. Calif. Acad. Sci.*, 10, Vol. I: 1-611.

